2.0 Proposed Action and Alternatives

2.1 Proposed Action

BPA is proposing to rebuild a 17-mile portion of its existing Santiam-Chemawa No.1 transmission line from single-circuit 230-kV to double-circuit 230-kV with the following exceptions stated below. The new double-circuit line would occupy the existing Santiam-Chemawa No.1 **right-of-way (ROW)** and would be constructed from BPA's Santiam Substation to the tap to PGE's Bethel Substation. At the tap, the new double-circuit line would split to single-circuit, with one circuit connecting into PGE's existing line to Bethel Substation and the other circuit connecting to BPA's existing line to Chemawa Substation. (See Map 1.)

The line would be double circuit except in the following three areas where it would be single circuit:

- The new Santiam-Bethel line and existing Santiam-Chemawa line would come out of Santiam Substation as two single-circuit lines. The second tower in mile 1 of the existing Santiam-Chemawa line would be rebuilt and would be the first double-circuit tower to carry both the existing and the new lines.
- In mile 2 of the proposed project, three new single-circuit towers would be built to allow passage of the new lines under BPA's existing Marion-Lane and Marion-Alvey 500-kV lines.
- In mile 17 at the tap to PGE's Bethel Substation, two BPA towers would be removed and replaced with one double-circuit tower in about the same location. PGE's two existing 3-pole wood structures at this location would be removed and replaced with one new 3-pole wood structure on PGE's ROW just southwest of BPA's new double-circuit tower. This would allow the new line to tie back into the existing single-circuit line.

All existing steel lattice towers would be replaced with taller steel lattice towers in approximately the same locations. The taller lattice towers would be about 135 feet (ft) high, about 65 ft taller than those supporting the existing single-circuit 230-kV line. (See Figure 1.) Approximately 1,400 feet of new access road would need to be constructed along the existing ROW. About 14 **danger** trees would need to be cleared. Danger trees are trees outside the ROW that could fall and damage the line. Three additional ROW easements would need to be purchased near Santiam Substation and in miles 2 and 17. Some additional trees in the new ROW near Santiam Substation or elsewhere may need to be cut.

The total cost of the project would be about $12 million.

2.2 No Action Alternative

In the No Action Alternative, BPA would not rebuild the Santiam-Chemawa transmission line. As a result, normal and extreme cold winter load conditions could cause thermal overloading of existing facilities. (See Section 1.2.)

2.3 Alternatives Eliminated from Consideration

During the scoping process, a number of commentors suggested alternatives. In addition, BPA systems planners also developed alternatives. The following alternatives were eliminated for the reasons given.

2.3.1 Construct a New Single-Circuit Line

BPA originally proposed to construct a new single-circuit 230-kV transmission line next to the existing single-circuit Santiam-Chemawa No.1 line. This alternative would eliminate the overloading but would require a 125-foot wide ROW. The new line would directly impact landowners by taking prime agricultural lands out of service. Because of the potential environmental impacts, this alternative was eliminated from consideration.

2.3.2 Reconductor the Single-Circuit Line

Another alternative that was considered was rebuilding the existing single-circuit 230-kV line with a larger conductor 230-kV line. This would require a complete rebuild of the existing circuit. Although this alternative would relieve the overload in the short term, the new single-circuit line could overload again in 4-5 years, requiring BPA to develop a new solution for the problem at that time. Because it would not solve the long-term need for the project, this alternative was eliminated from further consideration.

2.3.3 Conservation

BPA has extensive experience with energy conservation in the Pacific Northwest. Conservation programs are typically used to solve problems and modify electricity use patterns in limited geographic areas at specific times of the day and year. Although conservation measures would reduce energy consumption in the area, they would not be enough to solve the problem of overloading during peak winter electricity usage.

2.3.4 Building an Underground Transmission Line

Some people suggested that BPA consider putting the new line underground. BPA considers and at times has used underground transmission cables for new lines. Transmission line cables are highly complex in comparison to overhead transmission lines. Even with current technologies, transmission cables normally exceed the cost of overhead transmission lines by many times.

Because of the cost, BPA uses underground cable in limited special reliability or routing situations. Examples of these situations are locations where unusually high circuit reliability is required, such as near nuclear power stations and locations where high capacity lines must cross. Underground cables are also considered where an overhead route is not appropriate, such as at long bay crossings or in urban areas. Underground cables are also considered for lower voltage lines when this would provide a route for a new higher capacity line and minimize the cost of the new line.

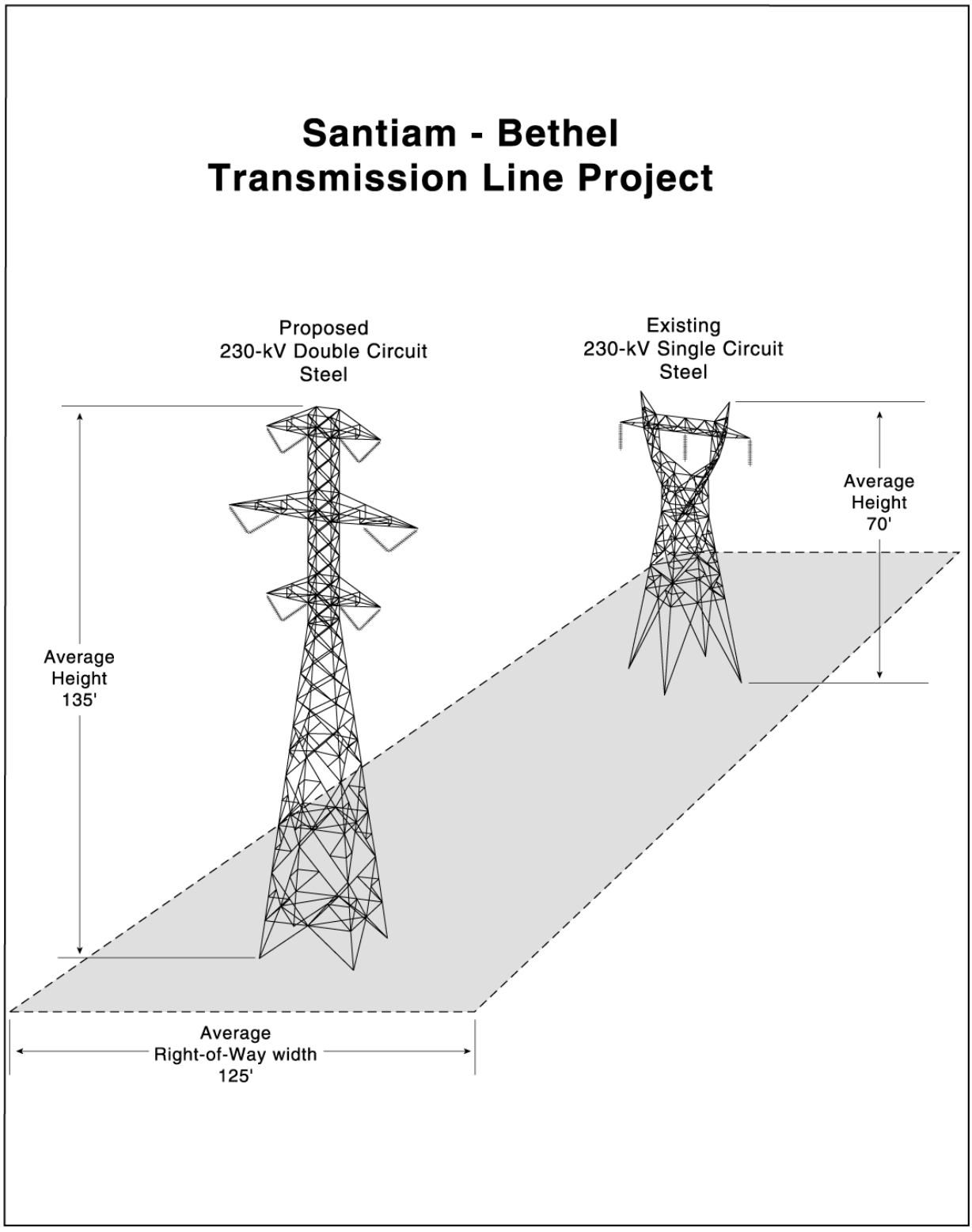

Figure 1
Existing and Proposed Structures

Since underground transmission cables are only used in a few specific situations, transmission cables used by BPA are short in comparison to typical overhead transmission lines. BPA's longest underground transmission cable (at 115-kV) is 8 miles.

BPA has kept abreast of transmission cable technologies. Cable technologies have not advanced as fast as the industry anticipated they would 10 years ago, nor have costs declined as expected. Cable remains a tool available for special situations, but because of its high cost it was eliminated from further consideration.

2.4 Comparison of Alternatives

The Proposed Action would have minor and/or short-term environmental impacts. The Proposed Action would be more expensive in the short-term but less expensive in the long-term due to improved system reliability. Rebuilding the Santiam-Chemawa transmission line would improve system reliability by preventing potential thermal overloading, voltage collapse, and loss of load on the existing system.

The No Action Alternative minimizes environmental impacts; however, it could have similar impacts to the Proposed Action if thermal overloading causes the existing system to fail and the line needed to be replaced in the future. The No Action Alternative costs nothing now but would be more expensive in the long term if system reliability is compromised. The No Action Alternative could result in power outages and potential damage to the line and property near the line.

Table 1 summarizes potential environmental impacts of the Proposed Action and the No Action Alternative.

Table 1 Summary of Impacts

Environmental Resource	Proposed Action	No Action Alternative
Land Use	Localized and temporary disruption of maintenance or harvest of active agricultural fields. Short-term, construction related impacts such as noise, dust, soil compaction and erosion.	Impacts associated with maintenance of the existing line would continue.
Socioeconomics	Minor and temporary increases in the use of local motels/hotels, recreational parks, and campgrounds by construction workers. Minor increase in employment and spending in the local economy over the short-term.	Outages could result; increased maintenance costs.
Visual Resources	Short-term and minor impacts from construction activities in certain locations along the ROW. Change in visual appearance from existing line. However, the rebuild would be within an existing transmission line corridor, so the visual change would be minor.	No impacts expected.
Soils and Geology	Short-term increases in erosion accompanying access road improvements, pole assembly and erecting, and clearing to provide access to work areas. Heavy equipment could also compact sites, reducing soil productivity. Long-term impacts could include localized runoff and erosion at structure sites or where access roads have been built or modified.	No impacts expected.
Vegetation	Potential increase in weedy, non-native vegetation in the ROW, primarily Scot's broom and Himalayan blackberry, from vehicular traffic and ground surface and vegetation disturbance during construction.	No impacts expected.
Fish and Wildlife	Temporary displacement of species sensitive to human activity from habitats adjacent to the project area. Removal of danger trees within or next to the ROW may result in a minor reduction of wildlife habitat available. Removal of danger trees along the North Santiam River and an unnamed tributary to Beaver Creek could have a minor effect on riparian function. Temporary and localized noise disturbance. Degraded water quality from possible chemical spills and sediment from erosion during construction.	No impacts expected.
Wetlands	No impacts expected.	No impacts expected.
Floodplain	No impacts expected.	No impacts expected.
Water Quality	Degraded water quality from possible chemical spills and sediment from erosion during construction.	No impacts expected.
Cultural Resources	No impacts expected.	No impacts expected.
Public Health and Safety	No impacts expected.	No impacts expected.
Noise and Radio/Television Interference	Possible (and correctable) minor interference with radio/television reception. Short-term increases in noise during construction.	No impacts expected.